

Remarks

Reconsideration of this Application is respectfully requested.

Claims 25-38 are sought to be added. Claims 19 and 21-24 are sought to be amended. Upon entering this amendment, claims 19-38 are pending in the application, with claims 19, 26, and 34 being the independent claims. No new matter has been entered based on these amendments.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103(a)

Claims 19-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,953,388 to Barada ("Barada") in view of U.S. Patent No. 4,604,892 to Carraras ("Carraras"), or in the alternative, in view of U.S. Patent No. 3,948,082 to Zumbach ("Zumbach"). Applicant traverses these rejections.

Claim 19 recites at least:

A method, comprising:

...

scanning the first probe over a reference surface to produce successive reference values, such that a size of an opening of the elongated nozzle allows for an entire area of the reference surface adjacent the first probe during the scanning to be measured by substantially eliminating low sensitivity areas;

scanning the second probe over a measured surface to produce successive measured values, such that a size of an opening of the elongated nozzle allows for an entire area of the measured surface adjacent the second probe during the scanning to be measured by substantially eliminating low sensitivity areas; and

...

Barada teaches a differential air gauge sensor, but lacks any teaching of using an elongated probe.

Zumbach teaches a thickness measuring device coupled to a differential air gauge sensor (See Fig. 7). It appears that the teaching of an elongated probe (Fig. 4) is only

directed to thickness measuring using inductance measuring with coils. Thus, it appears the elongated probe is unrelated to any distance measuring done using the differential air gauge, which measures a distance only to determine where to position the thickness measuring device.

Carraras teaches of a single probe used to measure volume or thickness of an object on a substrate, where an end of the probe is elongated to conform to the shape of the object on the substrate being measured. The thickness of a material deposited on a substrate is measured by determining a difference between first and second measurements taken at different times, i.e., before and after deposit of a material on substrate.

Neither Zumbach or Carraras make up for the deficiencies in Barada. Moreover, neither Zumbach nor Carraras are used to teach or suggest at least "a size of an opening of the elongated nozzle allows for an entire area of the reference surface adjacent the first probe during the scanning to be measured by substantially eliminating low sensitivity areas," as recited in claim 19.

For example, this feature is described in an exemplary portion of the instant specification as follows:

FIG. 6 shows an end view and characteristics of a circular gas gauge proximity sensor 600. One issue with proximity sensor 600 is that the sensitivity footprint, depending on the nozzle size and standoff, is often a torus like shape. Based on the torus shape, sensor 600 can have a region 602 of lesser sensitivity (see area 606 on graph 608) right under the orifice 604. This can be because side restriction regions 603 have a separation S. Sensed area 603 can be a "scanned" footprint based on several successive readings. Ideally, it is desirable to eliminate this lower sensitivity region 602 in the central portion of air gauge 600.

One way to achieve this is to provide a dramatically smaller orifice, but this can result in a smaller sensing area and less standoff. Additionally, when used as a scanning device, the topography passing near the center of the device is not considered as important as the topography passing near the upper or lower shell. Additionally, it is often desirable to compare topography results between sensor types (optical, capacitate etc). The unusual

sensitivity footprint of the standard air gauge complicates this process.

In regards to reducing sensitivity, an exemplary portion of the instant specification states:

Using the elongated nozzle having the long and thin orifice substantially eliminates any low sensitivity areas found in conventional sensors (see FIG. 6, elements 602 and 606) partially because side restriction regions overlap (see FIG. 4, elements 356 and 360).

However, neither of the alleged elongated probes in Zumbach and Carraras teach or suggest this feature.

In contrast, Carraras is directed to making sure the probe matches a shape of a deposited resist, where it states:

The jets shown at 5, 6 and 7 according to their shapes allow, because they are homothetic with respect to the shapes of the resistances while remaining inscribed therewithin, all the variations of thickness of the deposit to be integrated for the flow of the air currents is directly related to the flow resistance per unit of length. Thus the jet 5 will have a square section if deposit 2 has a square section, but a circular section in this case also gives good results if the circle is inscribed within the square formed by the resistance. Jets 6 and 7 each have rectangular section, for the shape of resistances 3 and 4 are rectangular.

Zumbach fails to state anything regarding what characteristics are associated with its probe 18'.

Therefore, for at least the reasons stated above, none of the applied patents teach or suggest, either singly or in an allegedly obvious combination, at least "a size of an opening of the elongated nozzle allows for an entire area of the reference surface adjacent the first probe during the scanning to be measured by substantially eliminating low sensitivity areas," as recited in claim 19. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections. Also, at least based on their dependency to claim 19, claims 20-25 should be found allowable.

New Claims 26-38

New claims 26-38 are similar to claims 1-18 pending in the Amendment and Reply of February 28, 2005. These claims should be found allowable based at least on the Arguments above and the Arguments made in the February 28, 2005 Amendment and Reply.

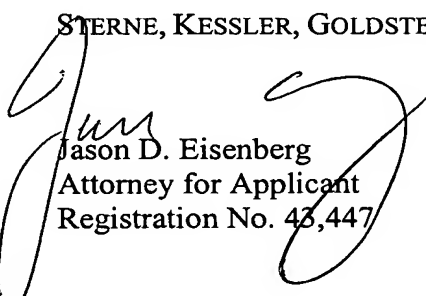
Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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